REMARKS

Claims 1-8, 10-16, and 20-23 and 25 are pending. Claim 1 is
amended, claim 24 is canceled, and new claim 25 is presented
herein.

Claims 1-8, 10-16, and 20-24 stand rejected for alleged
obviousness. Reconsideration in view of the amendments and
arguments presented below is respectfully requested.

Claim Amendments

Claim 1 has been reworded for clarity; the scope of claim 1
has not been changed. New claim 25 recites an embodiment of the
extrudate of claim 1 in which the ratio of the pore volume in
pores of diameter over 1000 nm to total pore volume is more than
0.04. Support is found in the specification, for example, at page
3, lines 7-9: "whereas the ratio of the pore volume in pores of
over 1000 nm to total pore volume should preferably be more than
0.04." No new matter has been added.

Rejection Under 35 U.S.C. 103(a)

Claims 1-8, 10-16, and 20-24 are rejected as allegedly
obvious over Mulaskey U.S. 3,673,079 in view of Neel U.S.
4,554,268. The rejection is respectfully traversed.

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Mulaskey is alleged to "at least suggest 0.05 ml/g of pore volume in pores of diameter over 1000 nm, when the amount of total alumina, and thus total pore volume, is greater (no particular total pore volume is claimed)." Office Action at page 2, last four lines). Thus, the Examiner has taken the position that the claim limitation of "wherein the pore volume in pores of diameter over 1000 nm as determined by mercury porosimetry is at least 0.05 ml per gram of unit mass of said extrudate" (presently amended claim 1, emphasis added) can be met by the Mulaskey material simply by increasing "the amount of total alumina". This reflects a fundamental misunderstanding of the claim.

Claim 1, both as reworded for clarity and as previously worded, expressly defines the pore volume of pores having diameter over 1000 nm, as measured by mercury porosimetry, as at least 0.05 ml per gram of unit mass of said extrudate. Thus, if as proposed by the Examiner, the amount of alumina extrudate material is increased, then the pore volume of pores having diameter over 1000 nm expressed in units of ml/g, as in claim 1, would NOT increase as suggested by the Examiner, because the claim term is already normalized to the amount of material ("per gram of said extrudate"). The claim limitation is expressed in units that are independent of the amount of material.

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Mulaskey completely fails to teach or suggest an alumina extrudate "wherein the pore volume in pores of diameter over 1000 nm as determined by mercury porosimetry is at least 0.05 ml per gram of unit mass of said extrudate". Mulaskey teaches an extrudate with low pore volume of 0.25-0.4 ml/g, a narrow pore size distribution, the pores being predominantly "micropores" with diameters below 100 nm, and with less than 10% (i.e., less than 0.025-0.04 ml/g) of the pore volume attributable to "macropores" having diameters above 100 nm. See Mulaskey at col. 5, lines 50-58. It would have been readily apparent to a person of ordinary skill in the art at the time of the invention, who understands the nature of pore size distributions, that the extrudate taught by Mulaskey could not possibly satisfy the present claim requirement of at least 0.05 ml/g of pore volume in pores larger than 1000 nm. That is because, given the nature of pore size distributions, there will of necessity be less volume of pores greater than 1000 nm than volume of pores greater than 100 nm in the Mulaskey extrudate, and therefore less than the volume of pores greater than 1000 nm required by the present claims. The factors taught by Mulaskey which make this so include: (1) narrow pore size distribution; (2) having less than 10% of the pore volume in pores

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larger than 100 nm; and (3) a total pore volume in the range 0.25-0.4 ml/g.

Applicants have now verified these theoretical distinctions with experimental measurements of pore volume and pore size distribution on samples of Applicant's claimed alumina extrudate material compared with alumina extrudate material prepared according to Mulaskey. The details of the experiments and the results are described in the attached declaration by one of the inventors, Dr. Cornelius Bayense. As can be seen from the declaration, both the Mulaskey material and the claimed materials showed properties such as total pore volume and pore size distribution that are fully consistent with the disclosures of Mulaskey and of the present specification. The results obtained revealed <u>no</u> measurable pore volume in "macropores" greater than 1000 nm for the Mulaskey material. In contrast, the two samples of claimed material both were found to have 0.07 ml/g of pore volume in "macropores" of diameter greater than 1000 nm, within the claimed range of greater than 0.05 ml/g. This confirms the theoretical analysis in the previous paragraph, and demonstrates conclusively that the teachings of Mulaskey do not even suggest an alumina extrudate material having at least 0.05 ml/g of pore volume in pores of diameter greater than 1000 nm.

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Neel is cited for teaching an alumina extrudate having a bulk crushing strength of 1-4 MPa. Neel does not cure the defect of Mulaskey. The cited references, either alone or combined, fail to teach all the limitations of the instant claims. Therefore, the claims are not obvious, and withdrawal of the rejection is requested.

SUMMARY

Entry of the amendments, withdrawal of all the rejections, and allowance of all pending claims are respectfully requested.

The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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